

Document Number: GLM-QS-1700.1.15

Revision: Revision C

Effective Date: 6/24/2016

Expiration Date: 6/24/2021

Glenn Safety Manual – Chapter 15

Personal Protective Equipment

Approved by: QS/Chief, Safety and Health Division

Distribution: BMS Library

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Cleveland, OH 44135**

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GLM 1700.1.15

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Change Record

Rev.	Effective Date	Expiration Date	GRC25, Change Request #	Description
B	2/21/2012	2/21/2017	81	Process and format updates
Change 1	4/14/2014	2/21/2017	N/A	Administrative change to add front cover and change history log to comply with NPR 1400.1. Deleted “The authority for this program is outlined in” and inserted “The GRC shall follow the requirements of” in Section 4.0 Policy
Change 2	9/30/2015	9/30/2015	N/A	Administrative change to remove hyperlinks.
C	6/24/2016	6/24/2021	16-002	IFO Audit finding – reflect requirements within NPR 8715.3; add PPE procurement to roles and requirements.

***Include all information for each revision. Do not remove old revision data. Add new rows to table when space runs out by pressing the tab key in the last row, far right column.*

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Chapter 15—Personal Protective Equipment

***NOTE:** The current version of this chapter is maintained and approved by the Safety and Health Division (SHeD). The last revision date of this chapter was June 2016. The current version is located on the Glenn Research Center (GRC) intranet within the BMS Library. Approved by Chief of Safety and Health Division.*

1.0 PURPOSE

This chapter establishes procedures and practices for the selection and use of personal protective equipment (PPE) not covered by specific programs (e.g., hearing protection or respiratory protection) at the NASA Glenn Research Center's (GRC) Lewis Field and Plum Brook Station (PBS) sites.

The purpose of this chapter is to provide guidance to employees and supervisors on the selection of appropriate PPE to prevent injury or illness that may result from hazards that cannot be controlled using administrative or engineering controls.

2.0 APPLICABILITY

This chapter is applicable to all civil servants, support service contractors, construction contractors, students, and visitors at GRC sites.

Support service contractors and construction contractors are responsible for the health and safety of their employees and for hazard analyses, training, PPE, medical surveillance, and other requirements to ensure compliance with regulatory requirements, OSHA, and NASA policy.

This chapter applies to the use of PPE to provide protection for hazards in the workplace, for example

- Eye and face protection (e.g., goggles and face shields)
- Head protection (e.g., hard hats)
- Foot protection (e.g., safety shoes)
- Hand protection (e.g., gloves)
- Chemical-protective clothing (CPC; e.g., full body suits)
- Flame resistant garments

Other Center programs within the Glenn Research Center Safety Programs Manual, Glenn Research Center Occupational Health Programs Manual, and Glenn Research Center Environmental Programs Manual reference specific PPE associated with the hazards the program addresses. A list of these programs can be found in APPENDIX B.

3.0 BACKGROUND

Hazards exist in every workplace in many different forms: sharp edges, falling objects, flying sparks, chemicals, noise, and a myriad of other dangers. The Occupational Safety and Health Administration (OSHA) requires employers to protect their employees from workplace hazards that may cause injury or illness.

Controlling a hazard at its source is the best way to protect employees. Depending on the hazard or workplace conditions, the use of engineering or work practice controls to manage or eliminate hazards to the greatest extent possible is recommended. For example, building a barrier between the hazard and the employees is an engineering control; changing the way in which employees perform their work is a work practice control. When engineering, work practice, and administrative controls are not feasible or do not provide sufficient protection, employers must provide PPE to their employees and ensure its use.

Workplace hazard assessments are performed to help identify hazards and the hazard controls. NASA GRC has multiple established processes to identify workplace hazards and the subsequent controls required to mitigate the hazards. Please see APPENDIX C for a list of current hazard assessment processes.

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All affected employees, in conjunction with, their supervisors, shall conduct a hazard assessment. The Safety and Health Division (SHeD) provides guidance so proper controls and, when necessary, the proper PPE can be selected. For further information, see Section 6.0.

***NOTE:** An online catalog the “PPE Quick Reference Guide” displays all PPE that is currently available through the Glenn Supply Management System. This catalog provides a user-friendly tool to assess PPE that is available at GRC, pictures, sizes, and corresponding catalog numbers for desired PPE, and supplemental information regarding PPE usage and limitations.*

4.0 POLICY

It is GRCs policy to comply with all applicable regulations regarding PPE and ensure that hazards are identified, appropriate PPE is utilized properly, and employees receive training on the use of PPE. This chapter describes the different types of PPE used at GRC and gives guidance on its selection and proper use and its relationship to the hazard assessment process. It describes the responsibilities of supervisors, employees, and SHeD personnel pertaining to PPE use, and it identifies the training required of all personnel using PPE. The OSHA standards that apply to each type of PPE are noted in Sections 6.3 to 6.10. Some types of PPE have their own chapter in the GSM or OHPM (e.g., hearing conservation and respirators) and are referenced as such. The SHeD is charged with establishing and maintaining adequate policies and procedures for the use of PPE. The GRC shall follow the requirements of NASA Procedural Requirement (NPR) 8715.3, NASA General Safety Program Requirements.

5.0 RESPONSIBILITIES

5.1 SHeD

SHeD shall develop, implement, and maintain all elements of the PPE program; provide training; and provide guidance in the selection and use of PPE. In addition, the SHeD shall

- Inform supervisors and employees of the required hazard assessment processes, as listed in APPENDIX C, through the PPE training program.
- Develop, maintain, and manage the GRC PPE training program.
- Perform spot checks and periodic audits.
- Work with the Logistics and Technical Information Division to ensure that proper PPE is supplied through the Glenn Supply Management System.
- Approve PPE purchases to ensure that all items are ANSI certified and meet the necessary requirements.
- Provide support for chemical protective clothing (CPC) and other applicable aspects of the PPE program.

5.2 Supervisors

Supervisors of civil servants and support service contractors using PPE shall

- Ensure that hazard assessments are performed, where applicable, to identify and control physical and health hazards.
- Ensure that all employees exposed to hazards in the workplace understand the hazards and the hazard assessments.
- Maintain a written certification of the workplace hazard assessment using the appropriate hazard assessment processes and the corresponding hazard assessment documentation (see APPENDIX C).
- Contact a SHeD safety engineer or industrial hygienist for assistance with hazard assessments of tasks that may pose exposure to hazardous chemicals.
- For each workplace with hazards that necessitate PPE that cannot be corrected with engineering or administrative controls:

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- Provide guidance on the types of PPE that will protect affected employees from the hazards identified in the hazard assessment.
 - Communicate selection decisions to each affected employee.
 - Ensure that each selected PPE properly fits each affected employee and is used appropriately.
- Attend the PPE training when such equipment is required in their area.
- Ensure that each affected employee is assigned to, attends, and understands the PPE training course provided by SHeD or the training at an alternative venue approved by SHeD.
- Ensure that each affected employee is prepared and able to use PPE properly before performing work that requires the use of PPE.
- Enforce the requirements of the PPE program in their area.
- Ensure that employees are retrained whenever:
 - Changes in the workplace render previous training obsolete.
 - Changes in the types of PPE to be used render previous training obsolete.
 - Inadequacies in an affected employee's knowledge or use of assigned PPE indicate that the employee has not retained the requisite understanding or skill.
- Ensure that employees are provided with all required PPE at no cost to them.
- Maintain records of the task-specific PPE training required and provided within the organization.
- Ensure that the Human Capital Development Division receives a copy of all PPE training records for entry and tracking in the System for Administration, Training, and Educational Resources for NASA (SATERN).

NOTE: Contractors shall maintain their own training records.

- Provide appropriate basic PPE, such as eye protection and hard hats, for visitors to hazardous locations, such as construction sites, machine shops, and chemical laboratories.

NOTE: PPE that requires specific training (respiratory protection, laser safety eye wear, etc.) cannot be issued without approval from SHeD. Personnel requiring this type of PPE will be referred to SHeD representatives whenever a question regarding the proper selection or use of PPE arises that cannot easily be determined with the resources provided to the supervisor or manager.

5.3 Employees

Employees shall:

- Before performing work that necessitates PPE,
 - Perform a hazard assessment in conjunction with their supervisors.
 - Attend PPE training.
 - Receive any applicable medical clearance.
 - Demonstrate understanding of PPE requirements and the ability to use, store, and properly decontaminate PPE.
 - Obtain the proper PPE in the proper size and fit for the work.
- Know the hazards in the workplace.
- Always wear designated, appropriate PPE for hazardous work.
- Inspect PPE for damage prior to use.

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- Procure PPE through GRC stock when it is available. Any PPE bankcard purchases shall be coordinated with SHed or the contractor safety officer prior to purchase. This is required by NPR 8715.3 and is to verify that selected PPE adheres to National Consensus Standards and has been properly selected for the work being performed.
- Not use personally owned PPE at GRC without the supervisor's approval.
NOTE: Personally owned safety shoes, prescription safety glasses, and other PPE must meet applicable OSHA requirements and ANSI standards. The employer is required by law to provide required PPE to employees at no cost to the employee.
- Properly dispose of defective or damaged PPE; bag and label PPE contaminated with hazardous materials destined for disposal as hazardous waste.
- Stop working in the hazardous area and notify the area manager or supervisor if there is any problem with issued PPE or concerns with the quality, appropriateness, effectiveness, or use of provided PPE.

5.4 Logistics and Technical Information Division Chief

The Logistics and Technical Information (LTID) Division Chief shall include PPE items in the Glenn Supply Management System (Stock) and shall notify the SHed PPE program lead before making any changes to available PPE items. All PPE shall meet or exceed OSHA and ANSI requirements. Additionally, LTID shall ensure that restricted PPE items, within Stock, not be released without SHed approval.

5.5 Medical Director, Occupational Medicine Services

The Medical Director of Occupational Medicine Services shall maintain complete, accurate records of all PPE-affiliated examinations for Civil Service personnel needing medical clearance prior to the use of PPE. Results of examinations are to be discussed with employees as needed.

NOTE: Support service contractors may, or, may not utilize the Center's Occupational Medicine Services. For such services rendered outside the Center, the employer of the individual shall maintain any relevant documentation regarding PPE medical clearance.

5.6 Contractors

Contractors are responsible for providing, implementing, and managing a site-specific PPE program as per NPR 8715.3. Contractor PPE programs shall comply with federal, NASA and GRC requirements.

5.7 Contracting Officers and Contracting Officer Technical Representatives

Contracting officers and contracting officer's technical representatives shall be knowledgeable about PPE program requirements and ensure that contractors comply with these requirements.

6.0 REQUIREMENTS

6.1 Hazard Assessment (*OSHA 29 Code of Federal Regulations (CFR) 1910.132(d)*)

The most important element of any health and safety program is an in-depth evaluation of the hazards present in the workplace. CFR 1910.132 OSHA states that the employer shall assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of PPE. The OSHA also states that the employer shall verify the required workplace hazard assessment has been performed, through a written certification that identifies the workplace evaluated; the person certifying that the evaluation has been performed; and the date(s) of the hazard assessment, and which identifies the document as a written certification of hazard assessment. The SHed provides guidance for job and task hazard assessments through a variety of processes (see APPENDIX C). The NASA form GRC237 PPE Hazard Assessment Survey and Analysis form was created as an individual employee hazard assessment tool to meet the requirements of CFR 1910.132. If one of the other hazard assessment processes, listed in APPENDIX C is used as an employee hazard assessment than it must address the required PPE, per the hazards, and include the date and name of whom performed the assessment as a minimum. Otherwise, the GRC237 should be used as supporting documentation to the process to meet the OSHA requirements (e.g., Safety Permit Process).

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6.2 Training (29 CFR 1910.132(f))

Employees using PPE shall be trained to know and understand:

- What PPE is necessary.
- When PPE is necessary.
- How to properly inspect PPE for wear or damage.
- How to properly put on and adjust the fit of PPE.
- How to properly remove PPE.
- The limitations of PPE.
- How to properly care for and store PPE.

Please note that PPE-specific training requirements are specified in each of the PPE subcategories (e.g., eye and face protection and hand protection) training requirements (29 CFR 1910.132(f)).

The SHed is available to provide training for all employees required to wear PPE. Training must be provided to employees before they are required to wear PPE.

Refresher training is required when:

- There is a change in the type of PPE being used, rendering previous training obsolete.
- The employee does not show the ability to properly use the PPE.
- A worker's job scope has changed or been altered, rendering previous training obsolete.

For chemical-specific training, contact SHed industrial hygienist, as appropriate.

NOTE: An online catalog "PPE Quick Reference Guide" displays all PPE that is currently available through the Glenn Supply Management System. This catalog provides a user-friendly tool to assess PPE that is available at GRC, pictures, sizes, and corresponding catalog numbers for desired PPE, and supplemental information regarding PPE usage and limitations.

6.3 Acquisition of PPE

PPE shall be ordered from the stock catalog. If the required PPE is not available from stock, any bankcard purchases must be reviewed and approved by SHed. This will be done by emailing the PPE point of contact with the item you wish to purchase, item number, the manufacturer's product information and the Job Hazard Analysis. A comment will be made on the bankcard purchase request form.

6.4 Eye and Face Protection (29 CFR 1910.133, 29 CFR 1926.102, and ANSI Z87.1–2001)

6.4.1 Eye and Face Protection Requirements

The requirements of 29 CFR 1910.133, 29 CFR 1926.102, and ANSI Z87.1 apply to any PPE used to protect the eye and face.

Eye and face protection must be worn when employees are exposed to eye or face hazards from:

- Flying particles
- Molten metal
- Liquid chemicals (acids, caustics, hot liquids, etc.)
- Hazardous gases or vapors

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- Potentially injurious light radiation

When the possibility of multiple and simultaneous exposures exist, protection against the highest level of each hazard shall be provided.

All protective eyewear used at GRC shall meet the requirements of ANSI Z87.1 or ANSI Z136 (for laser eyewear) and shall be marked with the manufacturer's name and applicable standard. Appendix D.6 has information on how to obtain this type of PPE from the Glenn Supply Management System (stock).

6.4.2 Eye and Face Protection Classifications

There are various types of eye and face protection available depending upon the specific hazard. All eye and face protection must be ANSI Z87.1 approved and have Z87 or Z87+ marked on them. Some types of eye and face protection follow:

- **Safety glasses.**—Used to protect the eyes from flying particles, machining chips, and minor impacts.
NOTE: Safety glasses must be selected based on whether the hazard is low (Z87) or high impact (Z87+) and must have integrated or attachable side shields.
- **Safety glasses with face shield.**—Used to protect the eyes, face, and neck.
NOTE: Face shields alone do not provide adequate protection from many hazards and must always be worn in conjunction with safety glasses with side shields or goggles. When employees handle high-pressure compressed gases or exposed cryogenics, face shields must be of sufficient length to protect the face and neck.
- **Goggles.**—Used to protect employees from airborne dusts, molten metal from gas welding and cutting, chemical liquids or vapors, and sources of high-intensity visible light, ultraviolet (UVA or UVB) radiation, or infrared radiation.
NOTE: Goggles must be selected for a specific type of hazard. They must have direct or indirect vent features if fogging can occur and be sized to accommodate prescription eyeglasses when required by the user.
- **Welding helmet.**—Required to protect employees from mechanical, thermal, and optical hazards associated with arc welding.
NOTE: Safety glasses or goggles must be worn in addition to the welding helmet.
- **Arc flash hoods, helmets, and face shields.**—Used to protect employees exposed to electrical arc flash hazards as required by National Fire Protection Association (NFPA) 70E, Standard for Electrical Safety in the Workplace.
NOTE: The maximum arc fault current must be determined by analysis to select the appropriate level of eye and face protection.

6.4.3 Eye and Face Protection Usage

6.4.3.1 Safety Glasses with Side Shields

Side protection is always required for safety glasses or safety goggles. Personnel may use prescription safety glasses, but these must be equipped with side shields, and glasses must meet the requirements of ANSI Z87.1. Prescription safety glasses may be ordered through GRCs Occupational Medicine Services as specified in Appendix D.6.

6.4.3.2 Contact Lens Wearers

Employees may wear contact lenses while performing hazardous work, but they must wear approved safety glasses or goggles. Otherwise, approved safety glasses or goggles must fit easily over prescription eyeglasses.

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6.4.3.3 Welding Helmet Wearers

Welding helmets are a controlled item within stock. Modern professional welding helmets are equipped with auto-darkening filters up to shade 10 that react to electrical arcs within a few milliseconds. Although OSHA does not specifically approve the use of these types of helmets because of the lack of test data, they are commonly used throughout industry and most comply with the radiant-energy filtering requirements of ANSI Z87.1. The GRC does not recommend or prevent the use of these electronic welding helmets. It is up to the employees' supervisor to determine if these offer adequate protection from optical radiation and to verify that the helmet does meet ANSI Z87.1.

Standard welding helmets, without auto-darkening filter lenses, must be equipped with appropriate shades for the type of welding to be performed, as specified in Appendix D.2.

6.4.3.4 Safety Glasses with Phototropic Lenses

Using phototropic lenses for operations where there are rapid changes in ambient light is not permitted. Examples would be tow motor or vehicle operators moving materials from exterior bright sunlight to interior artificial light. Phototropic or photochromatic lenses shall **not** be used for indoor industrial applications. They may be used outdoors only, providing the operations do not involve hazardous ultraviolet or infrared radiation.

6.4.4 Eye and Face Protection Inspection and Maintenance

Eye protection is a personal item and should be used exclusively by the individual to whom it is issued. All eye and face protection shall be maintained in a clean and reliable condition. Continuous use of dirty or scratched lenses can contribute to eye fatigue and result in accidents. Eye protectors shall be cleaned as needed in a solution of mild soap and water.

Pitted or scratched prescription lenses must be replaced before the safety eyewear may be used again. Supervisors shall ensure compliance. Prescription safety glasses may be procured through Occupational Medicine Services as specified in Appendix D.6.

6.5 Head Protection (29 CFR 1910.135, 29 CFR 1926.100, and ANSI Z89.1–2009)

6.5.1 Hard Hat Requirements

The requirements of 29 CFR 1910.135, 29 CFR 1926.100, and ANSI Z89.1 apply to any PPE used to protect the head from impact and electrical shock. Hard hats are required when there is a potential for injury to the head from falling objects, side impact, or bumps. Hard hats able to reduce electrical shock must be worn when an employee is near exposed electrical conductors that could contact the head.

Protective helmets and hard hats worn at GRC must meet the requirements established by ANSI for industrial head protection (ANSI Z89.1). APPENDIX D.2 has information on how to obtain this type of PPE from the Glenn Supply Management System (Stock).

6.5.2 Hard Hat Usage

All head protection used by employees must be ANSI Z89.1 approved and be marked with a Z89.1 stamp.

All head protection utilized by employees shall offer protection from impact and penetration by falling and flying objects and from limited electrical shock and burn. Therefore, bump caps shall not be used for protection from head hazards since they do not meet the ANSI requirements, which establish specific protective performance characteristics.

All safety hats shall be fitted so that there is at least 1½ inch of airspace between the top of the wearer's head and the inside shell of the hat. This permits the suspension to provide adequate cushioning. Hard hats must be worn such that the suspension system fits securely on the head and the hat adjustment is at the back. Wearing the hard hat in any other manner will seriously compromise its protective capabilities.

Chin-straps are recommended where there is a reasonable probability that safety hats could be knocked or blown off.

Winter liners can be worn in cold weather conditions.

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Protecting the head may also require covering or confining long hair when there is a potential for it to become entangled in moving machinery.

6.5.3 Hard Hat Inspection and Maintenance

Employees are responsible for inspecting their hard hats before each use. Hard hats should be cleaned of debris prior to inspections to ensure that all fractures and defects can be seen. Hard hats should be cleaned in warm water with a mild detergent. Solvents and other harsh chemicals should not be used to clean a hard hat.

All components including the shell, suspension, headbands, and accessories shall be visually inspected for dents, cracks, punctures, and any damage due to impact, rough treatment, or wear that may reduce the structural integrity of the hard hat below design criteria.

Damaged hard hats cannot be repaired. They shall be discarded and replaced. Other defective parts (suspension, chin strap, and other attachments) must be replaced with original equipment manufacturer (OEM) parts.

6.6 Foot Protection (29 CFR 1910.136, 29 CFR 1926.96, ASTM 2412–2005, ASTM 2413–2005)

6.6.1 Foot Protection Requirements

Per 29 CFR 1910.136, protective footwear with approved metatarsal or toe guards, or both, shall be worn by all personnel who are working in areas where there is a danger of foot injuries due to:

- Falling objects
- Rolling objects
- Piercing the sole of the foot
- Electrical hazards at ground level

All safety-toe footwear must meet the requirements and specifications of ASTM 2413–2005 and must be maintained in reliable condition in order to ensure its protective capabilities. Appendix D.3.1 has information regarding foot protection selection, and Appendix D.8 has information on how to obtain this type of PPE.

6.6.2 Foot Protection Usage

All footwear shall be properly laced and fit snugly. The toe cap shall cover the entire toe area of the foot. If the toe cap does not cover the entire toe area, or extends past the toe area, the footwear will not provide the proper fit or adequate protection, and it will be uncomfortable to wear.

6.6.3 Foot Protection Inspection and Maintenance

Footwear is a personal item and shall be used exclusively by the individual to whom it is issued. Footwear shall be maintained in a clean and reliable condition.

Footwear should be inspected before each use for:

- Tears in the upper part of the safety shoe
- Worn or torn laces
- Protrusions through the sole
- Dents in the toe cap or metatarsal protection

If any of the listed conditions occur, the footwear must be replaced immediately.

6.7 Hand Protection (29 CFR 1910.138 and ANSI 105-2011)

6.7.1 Hand Protection Requirements

The requirements of 29 CFR 1910.138 apply to applications where protective gloves are required. Hand protection is required when employee hands or arms are exposed to possible:

- Severe cuts and lacerations

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- Abrasions
- Punctures
- Skin absorption of harmful substances
- Chemical burns
- Temperature extremes

ANSI 105-2011 provides glove manufacturers a mechanism to classify their gloves for specified areas of glove performance to include; mechanical protection, chemical protection, detection of holes, heat and flame protection, vibration reduction, and dexterity. Chemical-resistant gloves are performance tested, following ASTM F739-07, by each manufacturer against chemicals to determine their ability to resist chemical breakdown from a specific chemical; therefore, the selection of chemical-resistant gloves must be based on the manufacturer's performance data, which is usually available online for most major manufacturers. Appendix D.7 has information on how to obtain this type of PPE from the Glenn Supply Management System (Stock).

6.7.2 Hand Protection Classifications

ANSI 105-2011 classifies gloves in multiple categories:

- (1) Mechanical Protection
 - a. Cut Resistance
 - b. Puncture Resistance
 - c. Abrasion Resistance
- (2) Chemical Protection
 - a. Chemical Permeation Resistance
 - b. Chemical Degradation Resistance
- (3) Heat and Flame Protection
 - a. Ignition Resistance and Burning Behavior
 - b. Heat Degradation Resistance
 - c. Conductive Heat Resistance
- (4) Vibration Reduction
- (5) Dexterity

Typically, gloves are designed to protect employees from physical hazards such as cuts, abrasions, and burns. Chemical-resistant gloves are designed to protect employees from chemical exposures.

6.7.3 Work Glove Usage

Work gloves *shall* be used in accordance with the manufacturer's recommendations. Loose-fitting work gloves *shall not* be used when an employee is working on or near open moving parts such as drills and grinders. In this case, the gloves must be form fitting and cannot have torn fragments hanging from them. There are several styles of tight-fitting work gloves available through the Glenn Supply Management System.

Oils and greases are common causes of occupational dermatitis. Oil- and grease-protective work gloves should be worn when working around oily and greasy parts. The Glenn Supply Management System currently stocks several nitrile-coated work gloves that will offer protection from oils and greases.

Thermal-protective gloves provide insulative protection from high temperatures, *not* protection from spilled cryogenic liquids. They are designed to fit loosely so that they can quickly be shaken off in case of a spill.

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Cryogenic water proof gloves provide protection from the extremely low temperatures associated with cryogenic liquids. They are designed to fit loosely so that they can quickly be shaken off in case of a spill.

6.7.4 Hand Protection Inspection and Maintenance

All hand PPE shall be maintained in good, clean condition in accordance with the manufacturer's recommendations. Gloves should be checked for signs of deterioration before every use.

6.8 Chemical-Protective Gloves and Clothing (29 CFR 1910.132, 29 CFR 1910.138, and ANSI 103-2010)

Hazardous chemicals can easily pass through inappropriate protective material resulting in direct contact with the skin. Many studies indicate that chemicals can be absorbed through the skin without being noticed by the worker. Chemicals absorbed through the skin, or indirectly ingested via dermal contact, contribute to the overall chemical dose. The CPC is designed to prevent hazardous chemicals from coming in contact with the skin. Appendix D.7 has information on how to obtain this type of PPE from the Glenn Supply Management System (Stock).

6.8.1 Chemical Protective Clothing Usage

When a hazard assessment has identified a need for CPC, proper selection is based on the:

- Task performed
- Identification of potential dermal hazards
- Severity of the hazard
- Degree of exposure to the hazard (frequency and duration)
- Employee sensitivity to CPC material (e.g., latex allergy)
- Performance data of the gloves and garments (permeation, degradation, penetration, and breakthrough time)

It is important to note the following when selecting CPC:

- Latex gloves offer no chemical protection and can only be worn to protect hands against general dirt and debris and only by individuals not allergic to latex.
- Users must know the glove or garment material and the manufacturer. Do not depend on the color and appearance of the garment to indicate performance information.
- Chemical-resistant gloves or garments may only provide limited protection against many chemicals.
- No single glove or garment material is suitable for all chemicals.
- Performance characteristics of gloves or garments are based on manufacturer's information.
- Chemical resistance varies by manufacturer. Always check with the manufacturer for material effectiveness against specific chemical conditions in the workplace.
- When working with a chemical mixture, CPC that protects against all the chemicals in the mixture must be selected. This may require more than one layer of CPC.
- When protection against physical and chemical hazards is required, two layers may be worn. For example, a chemical-protective glove can be used as a liner or first layer followed by an outer, more durable glove to protect against abrasion or punctures.
- Nondisposable, chemical-protective gloves and garments shall be cleaned after each use to ensure that chemical contamination does not remain on the glove.
- In some circumstances, it may be more cost effective to regularly dispose of cheaper gloves or garments than to reuse more expensive gloves or garments.
- Employees shall remove CPC in such a manner so as to prevent skin contamination. This is discussed in the PPE training.

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6.9 Electrical Personal Protective Equipment

For guidance on electrical PPE, refer to Chapter 8 of the GSM and NFPA 70E.

6.10 Flame-Resistant Garments (Clothing) (29 CFR 1910.132, NFPA 2112, and NFPA 2113) Chapter 8 of the GSM covers flame-resistant clothing as it pertains to electrical work (29 CFR 1910.269 and NFPA 70E)

Most Flame-Resistant (FR) clothing is designed to protect workers from two specific types of hazards, flash fire and electrical arc flash. Flame resistance can be an inherent property of a material, or it can be imparted onto a material by specific treatment. This treatment is usually a chemical treatment and clothing treated in this manner is sometimes referred to as Flame Retardant clothing.

All FR clothing must meet the requirements of NFPA 2112 and NFPA 2113. Appendix D has further information of FR clothing.

6.10.1 FR clothing Selection and Usage

A hazard assessment of the work and workplace needs to be performed to determine the need for the wearing of FR clothing. (APPENDIX C has more information of hazard assessment process at GRC) The hazard assessment should be used to determine if flammable materials are present in quantities that will generate a flash fire and endanger employees. Factors to consider in determining if FR clothing is required shall include, but not limited to:

- Proximity of the work to be performed to a hazard presenting a flash fire potential
- The presence of flammable materials in the environment during process operations
- The potential for the task being performed to increase the possibility of a flammable release; this could result from a mechanical failure such as a line breaking
- Operating conditions of the process — that is, potential for flammable fumes or vapors, and so forth
- The presence of engineering controls designed to reduce exposure to flammable materials present during normal operations
- Accident history
- Means and duration of egress within potential exposure zone (e.g., location and distance to exits, potential congestion, elevated or restricted areas, connections to lifelines/fall protection, capability of workers to escape, etc.)

For maximum protection, employees, who are required to wear FR clothing, shall adhere to the manufacturers' instructions. Supervisors and employees shall:

- Wear additional personal protective equipment (PPE) as determined as necessary from a review of the potential hazards
- Not wear nonflame-resistant clothing (street clothes, rain jackets, etc.) over flame-resistant garments
- Ensure FR or nonmelting undergarments (closest to the skin) shall be used. An incidental amount of elastic used on nonmelting fabric underwear or socks shall be permitted
- Wear FR collars closed
- Wear sleeves and cuffs down and secured
- Ensure that protective neck, head, hand, and foot coverings be worn if the occupational hazard warrants their use

6.10.2 FR Clothing Care, Maintenance, and Inspection

Organizations can choose to maintain their own FR clothing however, there are also private companies that can be contracted to inspect, launder, repair, and dispose of FR clothing in accordance with NFPA 2113.

Flame-resistant clothing shall be cleaned in accordance with manufacturer instructions. If cleaning instructions are not provided, protective garments shall be cleaned in accordance with the recommendations provided in ASTM F 1449, *Standard Guide for Care and Maintenance of Flame-Resistant and Thermal Protective Clothing*. FR clothing that is contaminated shall:

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- Be disposed of if decontamination is not recommended by the manufacturer or it cannot be achieved
- Be handled in a manner as to prevent cross-contamination
- Not be laundered or dry cleaned in public facilities
- Not stored with other clothing without being laundered

FR clothing shall be inspected by the employee for damage, soiling, or contamination after each use. Damaged and contaminated FR clothing shall be immediately removed from service. FR clothing shall also be removed from service when it exceeds the manufacturer-stated service life, if one is indicated.

Repair and alterations to FR clothing shall be done in accordance to the manufactures instructions. Repair and alterations to FR clothing shall be performed in the same manner and using the same materials as the manufacturer. Deteriorated FR clothing shall be disposed of when it can no longer be repaired or serviced. Appendix D.5 has more information on FR clothing.

7.0 RECORDS

Training records for civil servants.—Maintained by the Human Capital Development Division

Training records for support service contractors, construction contractors, maintenance contractors, and others.—Maintained by support organizations. (Copies of classroom attendance sheets will be made available to support organizations upon request.)

Records of workplace hazard assessments shall be maintained per the various document requirements.

All completed GRC237 forms shall be maintained by the supervisor and employee who originated the form.

Complete, accurate records of all PPE-affiliated examinations for personnel needing medical clearance prior to the use of PPE.—Maintained by Occupational Medicine Services (*for CS and SSC that utilize Center Medical Services*).

NOTE: Support service contractors may, or, may not utilize the Center's Occupational Medicine Services. For such services rendered outside the Center, the employer of the individual shall maintain any relevant documentation regarding PPE medical clearance.

8.0 REFERENCES

Document Number	Document Name
29 CFR 1910	Occupational Safety and Health Standards Subpart I—Personal Protective Equipment
29 CFR 1926	Safety and Health Regulations for Construction Subpart E—Personal Protective and Life Saving Equipment
ASTM F2413-05	ASTM Standard Specification for Performance Requirements for Foot Protection, 2005
ANSI/ISEA 103-2010	ANSI for Classification and Performance Requirements for Chemical Protective Clothing, 2010
ANSI/ISEA 105-2011	ANSI for Hand Protection Selection Criteria, 2011
ANSI/ ISEA Z87.1	ANSI Practice for Occupational and Educational Eye and Face Protection, 2010
ANSI/ ISEA Z89.1	ANSI Standard for Industrial Head Protection, 2009
NFPA 2112	Standard on Flame-Resistant Garments for Protection of Industrial Personal Against Flash Fire
NFPA 2113	Standard on Selection, Care, Use, and Maintenance of Flame-Resistant Garments for Protection of Industrial Personnel Against Flash Fire

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NPR 1800.1	NASA Occupational Health Program Procedures, Accident Prevention. Manual for Industrial Operations. 1988. National Safety Council, Washington, D.C.
GLM-QS-1700.1	Chapters from the Glenn Safety Manual are referenced in APPENDIX B
GLM-QS-1800.1	Chapters from the Occupational Health Programs Manual are referenced in APPENDIX B

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APPENDIX A.—DEFINITIONS AND ACRONYMS

Administrative controls.—Administrative controls are procedures used to eliminate or reduce the exposure to the hazard, for example:

- Altering the manner in which employees implement a given procedure or perform a given process or task
- Limiting the time that an individual performs a task
- Rotating employees

American National Standards Institute (ANSI)

American Society for Testing and Materials (ASTM).—Currently known as ASTM International.

Arc Flash - The passage of substantial electrical current through ionized air created by an electrical fault.

Breakthrough time.—The time it takes for a chemical to permeate through a material.

Chemical protective clothing (CPC).—Includes chemical-resistant gloves, aprons, coveralls, and boots.

Code of Federal Regulations (CFR).—A codification of the general and permanent rules published in the Federal Register by the Executive Branch departments and agencies of the Federal Government. As it pertains to the personal protective equipment program, the applicable elements of both 29 CFR 1910 (Occupational Safety and Health Standards) and 29 CFR 1926 (Safety and Health Regulations for Construction) apply.

Control measures.—Methods used to reduce or eliminate exposure to hazards or potential hazard.

Degradation.—The change in a physical property of glove or chemical-protective clothing material as a result of contact with an incompatible chemical: for example, discoloration, brittleness, softness, swelling, and weakness.

Dermatitis.—Inflammation of the skin.

Dose.—Level of risk due to chemical exposure determined by the:

- Concentration of the chemical
- Route of exposure
- Duration of exposure

Engineering controls.—Methods of controlling employee exposure by modifying the source or reducing the quantity of contaminants released into the work environment, for example:

- Machine guards
- Sound-absorbing panels
- Local exhaust and ventilation
- Substitution of a less hazardous chemical

Exposure.—Contact with a chemical, biological, or physical hazard.

Flame Resistant (FR) - The property of a material whereby combustion is prevented, terminated, or inhibited following the application of a flaming or nonflaming source of ignition, with or without subsequent removal of the ignition source.

Flash Fire - rapidly spreading fire caused igniting an atmosphere derived from hydrocarbon vapors of an ignitable liquid or finely divided combustible particles (e.g., coal dust or grain) in concentration exceeding the chemical's lower explosive limit (LEL).

Flame Retardant - A chemical compound that can be incorporated into a textile fiber during manufacture or applied to a fiber, fabric, or the textile item during processing to reduce flammability.

Glenn Research Center (GRC)

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Glenn Safety Manual (GSM)

Hazard assessment.—A method used to determine hazards related to specific job tasks. The assessment may include employee exposure monitoring. The hazard assessment determines the CPC use and provides the OSHA-required certification that the assessment has been conducted.

Job hazard analysis (JHA).—A method used to identify, quantify, and verify hazards related to job tasks.

Laboratory Standard Operating Procedure (LSOP)

NASA Procedural Requirement (NPR)

National Electric Code (NEC)

National Fire Protection Association (NFPA)

National Institute of Occupational Safety and Health (NIOSH)

Occupational Health Programs Manual (OHPM)

Occupational Safety and Health Administration (OSHA)

Operations Team (Ops Team)

Original equipment manufacturer (OEM)

Penetration.—Bulk flow of a chemical through a glove material (i.e., through seams and pinholes).

Performance data.—Testing data provided by chemical-resistant pers

onal protective equipment manufacturers to inform users of each material's ability to protect against specific chemicals. Performance data typically measures penetration, degradation, and permeation of a chemical through a specific material.

Permeation.—Movement of a chemical through a material at a molecular level without going through pinholes, pores, or other visible openings.

Personal protective equipment (PPE).—Clothing, devices, and other work accessories designed to create a barrier against workplace hazards. PPE includes items such as goggles, face shields, safety glasses, hard hats, safety shoes, gloves, respirators, hearing protection (ear plugs and muffs), and chemical protective clothing.

Plum Brook Station (PBS)

Safety and Health Division (SHeD)

System for Administration, Training, and Educational Resources for NASA (SATERN)

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APPENDIX B. -PROGRAMS WITH SPECIFIC PPE REQUIRMENTS

- Electrical-protective equipment (see Chapter 8 of the GSM)
- Shop Safety (see Chapter 14 of the GSM)
- Explosives, Propellants, & Pyrotechnics (see Chapter 18 of the GSM)
- Fall Protection (see Chapter 34 of the GSM)
- Digging, Trenching, & Excavation Procedure (see Chapter 35 of GSM)
- Asbestos (see Chapter 2 of the OHPM)
- Hearing protection (e.g., earplugs and muffs; see Chapter 3 of the OHPM)
- Respiratory protection (e.g., respirators; see Chapter 4 of the OHPM)
- Lead (see Chapter 5 of the OHPM)
- Bloodborne Pathogens (see Chapter 11 of the OHPH)
- Laser protection (see Chapter 13 of the OHPM)
- Synthetic Inorganic Fiber Program (see Chapter 19 of the OHPM)
- Nanomaterial Health and Safety (see Chapter 23 of the OHPM)

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APPENDIX C. -HAZARD ASSESSMENT PROCESSES

Note: The list below is a list of hazard assessment processes applicable to NASA GRC. This list may not cover all hazard assessments processes used at NASA GRC and approved by SHED.

Process Name	Description/ Purpose	Reference Document	Form/ Documentation
Bloodborne Pathogens Exposure Control Plan	Identifies potentially exposed employees and determines proper control measures	OHPM Chapter 18	
Chemical Pre-Approval Process	Acquisition of Hazardous Chemicals and Materials to identify area use and proper control measures	EPM Chapter 15	
Confined Space Entry Permit	Identify various hazards and controls for work in confined spaces, including excavations >4feet in depth	GSM Chapter 16	GRC199
Energized Electrical Work Permit	Identify electrical hazards and required control measures prior to performing energized work	GSM Chapter 8	GRC780
Facilities Inspections	Identify facility-based safety and fire hazards to provide a safe environment for employees to work	GSM Chapter 24	SHetrak
GRC Nanomaterials Usage Survey	Identifies types of nanomaterials in use by the GRC staff, current practices including PPE use and controls and assists in determining need for exposure assessment or additional controls	OHPM Chapter 23	GRC235
Fall Prevention Plan	Pre plan process for employees and SHED to determine the need for applicable types of fall protection based on the identified hazards	GSM Chapter 34	GRC979

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Hazardous Noise Exposure Assessment	Determines employee enrolment in the hearing conservation program and hearing protection requirements	OHPM Chapter 3	SHeD Report
Hot Work Permit	Prevent loss of life, property, and research capability caused by ignition from hot work operations. Mitigate hazards to ensure that all occupational health requirements are met to protect the workers and adjacent personnel.	GSM Chapter 28	GRC7a & GRC7b or GRC 7C
Job Hazard Assessment	Identify hazards associated with job/task and the control measure necessary to mitigate the hazards	GSM Chapter 33	GRC82
Job Hazard Assessment (work order system)	Identify hazards associated with job/task and the control measure necessary to mitigate the hazards	GSM Chapter 33	GRC239
Lab Standard Operating Procedures	Identify hazards associated with chemical laboratory operations	EPM Chapter 17	Chemical Hygiene and LSOP eRoom
PPE Hazard Assessment Survey and Analysis	Identify hazards associated with employees everyday work/ task and the control measures and PPE used to mitigate the hazards	GSM Chapter 15	GRC237
Respiratory Protection Hazard Assessment	Required to identify employee respiratory hazards to determine respiratory protection needs	OHPM Chapter 4	SHeD Report
Safety Permit & Process Hazards Safety	The process establishes a system for documenting operational hazards and controls for research and test operations. It is also designed to identify hazards that may result from changes.	GSM Chapter 1a GSM Chapter 3	GRC923 & GRC923a

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APPENDIX D.—SUPPLEMENTARY PERSONAL PROTECTIVE EQUIPMENT INFORMATION

The following information is intended to assist the user in selecting PPE.

NOTE: This is not an inclusive list, and any mention of a specific product brand name is not intended as an endorsement of that product.

D.1 Eye and Face Personal Protective Equipment Selection Chart

TABLE C.1.—EYE AND FACE PERSONAL PROTECTIVE EQUIPMENT SELECTION CHART (ANSI/ ISEA Z87.1)

Source (and some examples)	Assessment of hazard	Protection required
Impact (chipping, grinding, machining, masonry work, woodworking, sawing, drilling, chiseling, powdered fastening, riveting, and sanding)	Flying fragments, objects, large chips, particles, sand, dirt, etc.	Glasses with side protection Goggles Faceshields worn over spectacles or goggles
Heat (furnace operations, pouring, casting, hot dipping, and welding)	Hot sparks Splashes from molten metals High-temperature exposure	Glasses with side protection Goggles Faceshields worn over spectacles or goggles Screen faceshields Reflective faceshields
Chemicals (acid and chemical handling, degreasing, and plating)	Splash Irritating mists	Goggles (eyecup or cover type) Faceshields worn over spectacles or goggles Special-purpose goggles
Dust (woodworking, buffing, and general dust conditions)	Nuisance dust	Goggles (eye cup or cover type)
Electric arc welding	Optical radiation	Welding helmet over spectacles or goggles Welding shield over spectacles or goggles Typical shades, 10 to 14
Gas welding	Optical radiation	Welding goggles Welding face shield over spectacles or goggles Typical shades: Gas welding, 4 to 8 Cutting, 3 to 6 Brazing, 3 to 4
Cutting Torch brazing Torch soldering	Optical radiation	Spectacles Welding face shield over spectacles or goggles Typical shades, 1.5 to 4
Glare (working outside)	Poor vision	Glasses with shaded or special-purpose lenses Face shield over spectacles or goggles

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D.2 Eye and Face Personal Protective Equipment Selection Chart for Radiant Energy

TABLE C.2.—EYE AND FACE PERSONAL PROTECTIVE EQUIPMENT SELECTION CHART FOR RADIANT ENERGY (OSHA CFR1910.133)

Operations	Number of 1/32-in. electrodes	Arc current, A	Minimum protective shade
Shielded metal arc welding	Less than 3	Less than 60	7
	3 to 5	60 to 160	8
	5 to 8	160 to 250	10
	More than 8	250 to 550	11
Gas metal arc welding and flux-cored arc welding		Less than 60	7
		60 to 160	10
		160 to 250	10
		250 to 500	10
Gas tungsten arc welding		Less than 50	8
		50 to 150	8
		150 to 500	10
Air carbon arc welding		Less than 500	10
		500 to 1000	11
Plasma arc welding		Less than 20	6
		20 to 100	8
		100 to 400	10
		400 to 800	11
Plasma arc cutting		Less than 300	8
		300 to 400	9
		400 to 800	10
Torch brazing			3
Torch soldering			2
Carbon arc welding			14

D.3 Foot Protection

D.3.1 Foot Protection Classification

Foot protection is classified by ASTM F2413-05 utilizing the following tests:

TABLE C.3.—CLASSIFICATION TABLE TOE CAP COMPRESSION

Classification	Weight, lb	Clearance remaining in toe, in. (Male)	Clearance remaining in toe, in. (Female)
C/50	1750	0.5	0.468
C/75	2500	0.5	0.468

TABLE C.4.—CLASSIFICATION TABLE TOE CAP IMPACT

Classification	Force, ft-lb	Clearance remaining in toe, in. (Male)	Clearance remaining in toe, in. (Female)
I/50	50	0.5	0.468
I/75	75	0.5	0.468

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TABLE C.5.—CLASSIFICATION TABLE
METARSAL COMPRESSION

Classification	Weight, lb	Clearance remaining in toe, in. (Male)	Clearance remaining in toe, in. (Female)
MT/50	1750	0.5	0.468
MT/75	2500	0.5	0.468

TABLE C.6.—CLASSIFICATION TABLE
METATARSAL IMPACT

Classification	Force, ft-lb	Clearance remaining in toe, in. (Male)	Clearance remaining in toe, in. (Female)
MT/50	50	0.5	0.468
MT/75	75	0.5	0.468

Foot protection labeling classified by ASTM F2413-05:

- The label uses a specific four line format that identifies the type of footwear and the hazards for which it is designed to provide protection.

Line 1—Identifies that the footwear is protective footwear that complies to an ASTM standard with a specific year of issuance. Example: ASTM F 2413 05 (ASTM Standard No.) (Year of issuance)

Line 2—Identifies the gender of user and the classifications for impact resistance, compression resistance, and metatarsal impact resistance. For example:

M/I/75/C/75

M	I	75	C	75
Male	Impact Resistant Footwear	Impact Classification	Compression Resistant Footwear	Compression Classification

Lines 3 and 4—Identifies footwear made to offer protection from specific types of hazards.

CD—Identifies protection against conductive hazards

EH—Identifies footwear with outsole and heel made of electrical insulation properties

SD—Identifies footwear designed to reduce the accumulation of excess static electricity

PR—Identifies footwear designed to be puncture resistant

MT—Identifies footwear designed to be impact resistant to the top of the foot

CS—Identifies footwear which provides chain saw cut resistance

DI—Identifies footwear which provides dielectric insulation

—Shall only be used when more than three sections of this specification apply to any one pair of protective footwear

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Example:

Line 1	ASTM F 2413–05	Protective footwear which complies to the performance requirement of F 2413 issued in 2005.
Line 2	M/I/50/C/50	Footwear worn by male worker which has Class 50 impact resistance and Class 50 compression resistance.
Line 3	PR	Puncture resistant footwear
Line 4	CS	Footwear which is chain saw cut resistant

Several options are available for foot protection. Some options follow.

D.3.2 Toe Protection

- Toe armor.—Nonmetallic composite toe cap developed by Wolverine that totally encapsulates the toes, weighs less than steel, and transmits less cold.
- Steel toe.—Steel cap that can be heavy and can increase risk of frostbite in cold weather; extends from the sole of the shoe over the toes.
- Composite toe.—Nonmetallic toe that weighs less than steel and transmits less cold; extends from the sole of the shoe over the toes.

D.3.3 Soles

- DuraShocks soles.—Long-wearing, lightweight outsole with very high shock absorbance and durability (only offered in Wolverine brand of shoes).
- Vibram soles.—Tough, long-wearing soles available on more expensive shoes.

D.3.4 Shoe Material

- Kevlar stitching.—Organic fiber manufactured by DuPont with unique characteristics in comparison to other manmade or natural fibers—has high strength; high thermal, puncture, and cut resistance; and maintains resistance to many chemicals and solvents.
- Prosafe 2000 Super Leather.—A waterproof material that exceeds U.S. military specifications and is extremely durable and resistant to chemicals, alkalines, dilute acids, automotive fluids, and salts; exceeds NFPA heat and flame resistance requirements for firefighter footwear; remains soft, supple, and durable in harsh environments.
- GORE-TEX fabric.—Waterproof membrane that keeps liquids out while allowing air to penetrate; allows feet to breathe, keeping them cooler and dryer.

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- SympaTex waterproof material.—Waterproof material that keeps feet dry while allowing them to breathe.
- Thinsulate.—Lightweight, nonbulky shoe insulation by 3M that keeps feet warm.
- Insulated shoes.—Shoes that have an insulating material in the lining to keep feet warm and comfortable in cold environments.

D.3.5 Shoe and Shoe Features for Special Hazards

- Electrical hazard shoe.—Shoe designed to protect the wearer from open circuits of 600 V or less under dry conditions.
- SD1 (electrostatic dissipating) shoe.—Shoe constructed to reduce the accumulation of static electricity by conducting the body charge to the properly grounded flooring system; footwear falls within 10^6 to $10^8 \Omega$ of resistance, which is generally considered to be acceptable for semiconductor applications.
- Puncture-resistant sole.—Stainless steel midsole designed to reduce the hazards of puncture wounds caused by sharp objects that could penetrate the sole.
- Metatarsal protection.—Composite or steel plate that entirely covers the top of foot beyond the toes for additional protection

D.4 Hard Hat Classifications

Hardhats are classified by ANSI as follows:

- Class G.—Provides impact and penetration resistance as well as electrical protection up to 2200 V.
- Class E.—Provides impact and penetration resistance as well as electrical protection up to 20,000 V.
- Class C.—Provides only impact and penetration resistance; made of aluminum and will conduct electricity; should not be worn around electrical hazards

Two styles of hard hats are approved for use:

- Type I.—Offers protection from overhead impacts and penetration and limited side impact.
- Type II.—Offers protection from overhead and side impacts and penetration (much like a batting helmet).

Only Class G and Class E hard hats are allowed to be used at GRC. Hard hats ordered through the Glenn Supply Management System are rated Class E, Type I. Type II hard hats are permitted to be used but are not currently offered through the system.

D.5 Flame Resistant and Flame Retardant Garments (Clothing)

Garments for protection against flash fire are available from a variety of manufacturers, in a range of items (coveralls, pants, shirts, vests, parkas, rainwear, disposable garments, aprons, etc.). Flame-resistant garments are made out of a variety of either inherently flame-resistant fabrics or fabrics that have been treated with a flame retardant.

Listed below are examples of flame resistant and flame retardant clothing.

Flame Resistant:

- Nomex®
- CXP Nomex®

Flame Retardant Treatments for Fabrics:

- Dale Antiflame ® - Dale Antiflame trademark
- Indura * - Westex Inc. trademark

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- Proban ® - Albright and Wilson trademark
- Zirpro ® - Wool Foundation, Nominee Company Ltd. Trademark
- Pyrovatex ® - Ciba-Geigy Corporation Trademark

GUIDANCE ON OBTAINING PERSONAL PROTECTIVE EQUIPMENT

The following information is intended to assist the user in obtaining PPE.

D.6 Gloves, Hard Hats, Nonprescription Safety Eyeware, and Other Personal Protective Equipment

The Glenn Supply Management System (Stock) carries many types of PPE. A listing of PPE available can be found in the “PPE Quick Reference Guide”. The “PPE Quick Reference Guide” can be found on the SHED Web site under the Operations Teams program list, on the Glenn Supply Management System homepage in the header, or by typing PPE into the “Transport box” on the “WING” page. You can order PPE from the Glenn Supply Management System, or you can contact LTID

D.7 Safety Shoes

Periodically, GRC will bring a safety shoe truck to the Center so that employees and contractors can obtain safety shoes. For information on the next truck visit, contact SHED at 3–8848.

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